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ABSTRACT

This pamphlet contains a series of studies that grew out of the parent education project of the Institute for Development of Human Resources. The objectives and general design of the project consisted of instruction of 200 environmentally disadvantaged mothers by parent educators using a sequence of infant stimulation exercises conducted in the home. The individual studies presented represent a mix of graduate student pilot efforts, dissertation research, faculty investigations, and replications of pilot work. All have been edited and adapted to highlight the relationship between home factors, mother's attitude and behavior in the project, and her behavior toward children. Titles include: Relationship Between Maternal Behavior and Infant Performance in Environmentally Disadvantaged Homes; A Survey of Low Income Negroes in Alachuo and Surrounding Counties; Measurement of Self Esteem; A Study of the Relationships Between Trained and Untrained Twelve Month Old Environmentally Deprived Infants on the "Griffiths Mental Development Scale"; Relationship Between Maternal Behavior and Infant Performance in Environmentally Disadvantaged Homes; and Relationships Between Observed Home Behavior Variables and Infant Performance. (WY)

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RELATIONSHIPS BETWEEN SELECTED FAMILY VARIABLES AND MATERNAL AND INFANT BEHAVIOR IN A DISADVANTAGED POPULATION

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INTRODUCTION

This series of studies grew out of the general program of Parent Education of the Institute for Development of Human Resources. The large-scale Parent Education Program was initially funded from July 1, 1966, through June 30, 1967, by the Fund for the Advancement of Education. It is currently being supported by Children's Bureau and National Institute for Mental Health funds. A brief description of the project follows:

The Parent Education Project

Objectives

The project's objectives are to find out whether the use of disadvantaged women as parent educators of indigent mothers of infants and young children (a) enhances the development of the infants and children and (b) increases the mother's competence and sense of personal worth. It is understood that these two objectives may have a functional relationship with each other, but here we see them as two equally important outcomes which may be considered independently. (c) A third objective is to increase our knowledge of the home life of infants in this population.

Procedures

(a) General Design: The program consists of instruction of the mother by the parent educator in a sequence of stimulation exercises. The stimulation procedure consists of a systematic series of sensory-motor, tactile, and verbal experiences based upon a review of the theory and research on cognitive and affective development in the earliest years (Gordon and Lally, 1967). Instruction is given about once a week in the home. The mother is not only instructed in the mechanics of the exercises, but also in the general attitudes toward seeing them as play to be engaged in when

both mother and child might enjoy them. These materials are presented so that the mother learns by imitation of the parent educator, who involves the mother in the actual task.

(b) Sample of Mothers: Approximately 200 mothers and their infants were identified at the birth of the latter in the J. Hillis Miller Health Center Teaching Hospital of the University of Florida. The criteria for selection, in addition to the economic code of "indigent" on the hospital admission form, were: single birth, no breech or Caesarian delivery, no complications to mother or infant, no evidence of mental retardation and no evidence of mother's mental illness. Assignment to experimental or control group was random.

(c) Sample of Parent Educators: Fifteen parent educators, 12 Negro and 3 white (in rough proportion to the numbers of Negro and white deliveries at the Health Center) were selected in August, 1966. The original criteria were: high school graduation, unemployed, or low-level employment, some experience with infants. There were many Negro applicants, few whites. Eleven of the original group remain on the project as of December, 1968.

A second phase was begun in July, 1967, with the addition of two new experimental groups and one control group. This phase was designed to test whether the particular series, or another pattern, with equal amount of time spent in the home instructing the mother, might contribute more to child development. Six new half-time parent educators and approximately 110 new families were added at that time.

Relationships Between Population Variables and Behavior

In any large-scale report there are numerous unanswered questions

concerning the nature of the people being studied and the effects of the program on them. Certain such questions were formulated in the original designs as hypotheses to be tested, but as we have worked, a number of new approaches and new questions developed. These studies grew out of our work and were made possible by the generosity of the Fund for the Advancement of Education in allowing us to use the unexpended portion of the original grant. Most of these were carried on by graduate students who not only were able to make a contribution to the program but also were thereby helped in research training and experience. A fundamental aim of the Institute in its approach to research is that this dual goal of obtaining information and training graduate students be reached. These studies reflect the effort.

The description of the sample population conveys little information about who they are and what their culture is. Can we assume that there is a "culture of poverty" that overrides racial and demographic differences within the group? How do the people actually live, and what are their family patterns? Obviously we still have incomplete answers to these questions and probably always will. Two studies were mounted to provide some details. Carol Bradshaw observed in the homes of one of the original control populations. Patricia Kwachka used a mixture of interview and observation approaches to obtain her data. The Parent Educators observed while they were working with the mothers and filed weekly reports (PEWR). A number of home factors were included in these reports.

We were concerned with such questions as: what are the relationships between home factors, the mother's attitude toward, and behavior in the project and her behavior toward her children? What

is the mother's view of herself? Are there any specific relationships between the home factors, maternal factors, and the child's performance?

The individual studies presented here represent a mix of graduate student pilot efforts, dissertation research and faculty investigations and replications of pilot work.

Although each study can stand on its own, they all are approaches to the questions stated above. Each study has been edited and adapted to fit into this report. Additional answers to these questions were originally designed into the program, and data and findings will be reported in the final reports to the Children's Bureau, to the National Institute of Mental Health and in subsequent research reports. This report represents one set of findings and is organized to demonstrate what a small amount of money released for individual work can contribute when integrated into a large-scale study. I feel this model of a large project approach with small studies spun off is an extremely valuable way of conducting research and developing graduate students.

Relationship Between Maternal Behavior and Infant Performance in Environmentally Disadvantaged Homes[1]

Carol E. Bradshaw

The data for this study were collected over a fifteen-month period from October, 1966, to January, 1968. Visits began when the infant was three months old and continued until his first birthday. The data were collected on observation sheets immediately following each visit. At the same time, descriptive data concerning medical, social, economical, and educational aspects of the home and family were recorded in narrative form.

Each participating mother was visited in the hospital or soon after her return home. The mother was told that this study was being conducted by interested people at the University of Florida who wanted to learn more about what happens to a baby during his first year of life, how he grows and learns. It was further explained that, in order to collect this information, someone would make a visit each month to see the baby and to talk with the mother regarding his progress.

Sixteen of the mothers visited for this study were Negro and three Caucasian, ranging in age from 13-39 years. Eighty per cent of them were employed outside the home on a full-or part-time basis. The mean number of children per family was 3.8. Table 1 gives these characteristics in more detail.

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[1] This is the first of two edited excerpts from Carol E. Bradshaw's dissertation. This section presents data on maternal and home variables.

TABLE 1

MATERNAL AND HOME VARIABLES

Case #	Age	Race	# child	Emp.	Mar.	Infant's sex	sq-ft	VP	DP
1	26	N	3	yes	no	M	56	.48	.21
2	16	N	1	no	no	M	109	.38	.21
3	17	N	2	yes	no	M	46	.39	.27
4	37	W	5	no	yes	M	125	.47	.26
5	20	N	2	no	yes	M	125	.24	.40
6	30	N	5	yes	yes	M	317	.40	.06
7	33	N	1	yes	yes	M	100	.71	.21
8	16	N	1	yes	yes	M	71	.33	.06
9	37	N	12	yes	yes	M	72	.54	.18
10	17	N	2	yes	no	M	75	.32	.17
11	16	N	1	yes	no	M	45	.43	.21
12	31	N	5	yes	yes	F	57	.21	.06
13	26	N	2	yes	yes	F	27	.09	.01
14	39	W	10	yes	yes	F	28	.30	.13
15	13	N	1	yes	no	F	50	.37	.14
16	38	N	10	no	yes	F	47	.22	.14
17	21	N	2	yes	yes	F	98	.20	.04
18	26	W	3	yes	no	F	33	.29	.04
19	25	N	2	yes	yes	F	206	.19	.37

The general protocol for the monthly visits was established by the mother herself. Each visit averaged approximately an hour in length. The majority of the mothers made it a kind of social event during which the baby was displayed and discussed. Frequently neighbors casually "dropped in" to observe and later stayed to participate. If the visit happened to coincide with a favorite serialized television program, talking was at a minimum until the episode was over. A few of the mothers continued with their work during the visit, leaving the responsibility of reporting and "entertaining" the visitor to the older children.

The first contacts with these mothers were sometimes filled with awkward and embarrassing silences as the observer and observed sought common grounds for conversation. Several copies of Ebony or Life magazines were brought at each visit to help "break the ice" and to encourage continued participation in the project. A polaroid camera was also used to allow pictures of the growing infant and older siblings to be given to the mother. These snapshots were eagerly sought and highly prized. Some of the smaller children had never before seen a picture of themselves and reacted with awe and pleasure.

Upon leaving the home an observation sheet was completed which recorded maternal-infant behavior of a verbal and disciplinary nature. This form was developed to record the quantity and quality of verbal and disciplinary exchanges between mother and infant. The behavior listed was that which simply required observation to decide its presence or absence. Observational items were chosen following

discussion of form with representatives from the lower-class environment. Trial observations in the field were also made to determine the types of behavior which were more likely to occur. At the same time the comprehensive narrative account was written.

Four graduate students volunteered to help in the data collection for a period of eight months. In order to test for inter-observer reliability in the use of the BOF, a section of the film "Maternal Attitudes" was shown to these observers and their observations recorded, with agreement reaching 85 per cent. The same film was shown again five months later to check intra-observer reliability. At that time the average agreement of each observer to himself was 94 per cent.

To develop further skills, observers went into the field two at a time, visited a home, and then checked the agreement of their observations.

Six categories on the Behavior Observation Form were used to measure maternal verbalization. Table II contains the observation items. These observations were then transformed into numerical ratios consisting of observed occurrences/the total number of possible occurrences. If the visits over the nine months totaled 10, and the mother used each of the six categories at least one time per visit to communicate with her baby, this would allow a total of 60 possible occurrences. Actual observed occurrences could be as high as 60, making a numerical ratio of 60/60 or 1.000.

TABLE II

VERBAL INFORMATION

		M	F	S	GM	A	BS	Other	Nobody
A)	Talk sounds rather than words (ex: coo, coo)								
B)	Talk words rather than sounds								
C)	Use the baby's name (or nickname) when speaking to him								
D)	Repeat sounds the baby makes in a questioning way								
E)	Listen to the baby when the baby talks								
F)	In a few words, order or tell the baby to do or not to do things								
G)	Explain and describe things when talking to the baby								

The numerical score of maternal discipline was computed as a ratio of observed frequencies/the total number of possible occurrences. Table III contains the observation items. The observed frequencies of discipline could happen nine times in each of the 10 visits or a total of 90 actual incidences. There could be 90 possible incidences of maternal discipline for a total of 10 visits, making a 90/90 ratio or 1.000.

TABLE III

PUNISHMENT

		M	F	S	GM	A	BS	Other	Nobody
A)	Cries								
B)	Gets angry								
C)	Has temper tantrums								
D)	Gets dirty (clothes, hands, face)								
E)	Whines								
F)	Hits mother								
G)	Hits siblings								
H)	Puts himself in danger								
I)	Destroys or is about to destroy								

It was impossible to visit in the homes of these families for over a year and not observe many fascinating facets of their daily lives. Some of the observed peripheral behavior played a role in the growth and development of the infants, while others simply added "color" to a life style prevalent in this section of the country among disadvantaged families.

Infant Punishment

As the infant matured the patterns of punishment changed. Under six months of age there were almost no incidences of observed discipline. From seven to 10 months punishment increased from five to 38 incidences, with fathers, aunts, siblings, and grandmothers punishing 23 times as compared to 15 times for the mothers. As the infants reached 10 to 12 months of age they became more active and could move about autonomously. The rate of punishment then increased from 38 to 105 (out of a possible total of 148) for the nine-month period. Table IV shows that the infants were disciplined most frequently during the first three months for crying, while by the age of seven months they were punished most for getting into dangerous situations.

TABLE IV

COMPARISON BY AGE OF INFANT DISCIPLINARY PATTERNS AND THEIR FREQUENCY AS IMPLEMENTED BY MOTHERS AND OTHER MEMBERS OF THE FAMILY

Infant's Age (months)	Times Disciplined By			Disciplined By	Disciplined For
	Mother	Other	Total		
3-6	2	3	5	Threats	Crying
7-9	15	23	38	Removal from situation	Being in danger
10-12	52	53	105	Removal from situation	Being in danger
				Threats	Destroying property
				Raised voice	

The mother disciplined the baby most frequently by removing him from the situation, but as he reached nine months she also began to yell at him and to direct his behavior verbally. By 11 months this verbal discipline had become more threatening in nature with specifically stated consequences.

It is of interest to note that during the nine months of observation and the total of 148 incidences of discipline, reasoning or explanation as a means of discipline occurred only four times. This finding lends additional support to the often reported observations as to the scarcity of elaborate language codes among these families.

Sibling Punishment

The timing for punishment for older children varied from a detached calmness to a hair-trigger response among the observed

mothers. Nine mothers seemed to this observer to be quite permissive as to the degree of activity and level of noise among their children. Seven mothers seemed verbally abusive toward any child who exceeded the standards of behavior for that home, but they displayed more bluster and bluff than concerted action. The "hair-trigger" response was demonstrated by only three mothers. They reacted swiftly and punitively to a child's slightest misdemeanor, frequently without any advanced warning.

The method of punishment was fairly uniform among all families. Mothers kept switches or belts within arm's reach, and these tools were used to back up verbal warnings if unheeded for too long. Once an adult applied the belt or stick it was done with wholehearted vigor and vehemence.

Many adults adopted a teasing-testing method of play with their children. The adult seemed proud and amused at the small child's aggressiveness on the one hand, and yet on the other, actually daring him to go beyond the limits. Many children innocently entered into the teasing activity only to become caught up in a spiraling frustration and anger which led them to exceed the limits of allowable behavior. This teasing routine always ended in physical punishment for the child until he became sophisticated enough to recognize the pattern. Then he either ignored the invitation or broke off the play before losing control of himself.

Sibling rivalry was condoned and openly encouraged much of the time. The aggressive behavior of the youngest child was considered "cute" and even though it might be called "bad" or "mean" by the parents and relatives, there was a definite ring of pride in their voices. Even though the children frequently fought among

themselves, there was also evidence of affection and love among brothers and sisters. This affection among siblings was more overtly and naturally expressed than that between parents and child.

Rewarding Behavior

Observations over time showed that most of the rewarding behavior demonstrated by adults toward their infants was of a passive nature rather than one of active or close involvement. From three to 12 months the majority used a smile more often than other methods of reward. Hugging, kissing, and fondling the baby were only observed occasionally.

When comparing totals in Tables IV and V, it is apparent that rewarding behavior exceeded disciplinary behavior at each age period. Both increased as the infant matured.

The reasons for rewarding the infant changed somewhat as he became older. Until he was six months old he simply had to smile, but by seven to nine months he was rewarded equally as often for minding. During his 12th month he was frequently rewarded for learning something new.

Verbal rewards, such as telling the infant he was good, were observed a total of 23 times, out of a total of 266, with the largest number of incidences occurring at 12 months.

Both punishing and rewarding behavior toward the infant seemed to be equally divided between the mother and other members of the family by the end of the 12 months. This pattern seemed to reflect the increase in multiple-mothering that these infants experienced as their own mothers returned to work. Much of their care

TABLE V

COMPARISON BY AGE OF INFANT REWARD PATTERNS AND THEIR FREQUENCY AS IMPLEMENTED BY MOTHERS AND OTHER MEMBERS OF THE FAMILY

Infant's Age (months)	Times Rewarded By			Rewarded By	Rewarded For
	Mother	Other	Total		
3-6	44	19	63	Smiling	Smiling
7-9	35	40	75	Smiling	Smiling Minding
10-12	63	65	128	Smiling	Smiling Minding Learning

was then delegated to grandmothers, siblings, aunts, and neighbors. Since observations were done during the day, contact with fathers was of necessity at a minimum. There were only eight recorded observations of paternal reward and six of paternal punishment over the entire nine months.

Sibling Independence

Survival in this environment depends a good deal upon each individual's own efforts. Very young children were encouraged and trained to assume responsibility for themselves and their younger siblings. It was not unusual to visit a home where a five year old sister had been left several hours in charge of her two younger brothers. As a child grew older he cared for more children, so that by eight or nine years he was usually responsible for at least five younger children.

If there were no older children sometimes the baby was left alone. In one isolated home a younger mother propped her six months old infant on the couch and went to the store half a mile away. An electric fan whirred away within arm's length of the baby.

One 13-year-old mother frequently took her eight-month-old daughter with her on her "dates" to the nearest "moonhouse," both returning home around three or four o'clock A. M.

Health

This topic was of major concern to all the families, especially since they seemed to experience more than the usual share of illnesses. All 19 families had at least one serious illness during the year while eight families had more than five illnesses each.

The infants suffered most from upper respiratory infections which frequently resulted in chronic racking coughs. Infections and communicable diseases were frequent among all the children, and accidents such as falls, cuts, and burns were commonplace. Fresh impetigo lesions were evident on many of the infants' skins, while the older children had numerous scars from old infections.

Adults experienced a wide range of diseases and disabilities. Their ailments ranged from "high blood," to internal hemorrhage, asthma, arthritis, tuberculosis, cancer, strokes, and "very close veins." As the older person or "aged one" became physically incapacitated, an extended network of relatives, both in the immediate family and among more distant kin, supported the ailing member and "saw to" his needs. The younger children were also involved in this

close fabric of care provided for the aged and ailing. They ran errands, helped with cooking, cleaning, and laundry, and even baby-sat for the oldsters and ill relatives.

Mothers and grandmothers had an extensive list of conditions which they could alleviate through the application of "slavery remedies" passed down by word of mouth from woman to woman. For example, thrush could be cured by having a father, who had never seen his own father, blow into the sick baby's mouth for nine consecutive mornings.

If a baby had difficulty with teething then a brew of castor oil, castoria, and rabbit brains rubbed on the gums was sure to help the teeth come through painlessly. If rabbit brains happened to be scarce, then the raw egg treatment could be substituted. The infant's name was written on the surface of an uncooked egg as many times as possible. This egg was then placed in a small bag and hung over a doorway through which the infant passed many times during each day. There it was allowed to hang for several months until the majority of his teeth had been cut.

For a baby who was not walking as soon as he should "doodle bugs" dug from the yard were allowed to run over the bottoms of his feet. Another remedy for slow walkers was to stand the baby in a pan of used dishwater and allow the warm soapy solution to run down over his legs. This loosened tight knee caps and tendons which were "binding" his legs.

Almost all mothers in this sample refused to have the baby's hair cut before a year of age for fear that this would impair his speech.

Nutrition

Despite emphasis on the part of doctors and nurses to encourage mothers to breast feed their babies, this practice did not prevail in this group of families. Only one out of the 19 mothers breast fed her baby. Many other mothers thought they would like to breast feed, but they had to return to work soon after delivery which precluded any attempt to do so on their part.

Commercially prepared baby foods were used sparingly by most mothers. High cost was the usual reason for not buying pureed foods, but some said the baby preferred more richly seasoned foods and refused the bland baby foods. One baby ate canned foods until 10 months, but the majority of babies ate from the table by three months.

Most food preparation was done on wood burning stoves or single kerosene table top burners. There were few electric stoves and fewer ovens. Food was of necessity fried or boiled. All but two of the homes had some form of refrigeration.

The rural families all had small "table" gardens close to the house. Sometimes these were cooperative affairs and served more than one family. They always grew collard greens, and sometimes beans, squash, tomatoes, and melons. Urban families did not have gardens.

Eleven homes had no kitchen or dining table, and not even enough chairs for everyone to eat together. Many staples were prepared as "hand foods," i.e., sweet potatoes cooked in their skins. These hand foods were eaten as one walked about or squatted in the yard. Regular meal times were seldom observed, and then only in those homes where a working man came home to eat at night.

Foods most frequently seen in these homes were high in starch content and either dried or canned for storage. Potatoes, grits, beans, bread, and rice were the basic staples while fish and pork were the most commonly eaten meats. Small fish were cooked in toto and even children as young as three years ate them with no adult help. Milk was never drunk by anyone other than babies. "Pop" and sweet rolls were greatly cherished by both children and adults and were actually fought over.

Housing

These families lived in rented houses, most of them in wretched condition. The wooden frame house was most common and construction ranged from a ten-year-old "shell house" to "tar-papered" shacks. There were three concrete block houses and one made of sheets of corrugated tin nailed over a framework of scrap lumber. There were nine houses with indoor water and toilet facilities and 9 with a pump in the yard and sometimes an outhouse. One family did not even have the luxury of a pump in the yard. Their water was hauled once a week in jars, cans, and pails from a distant spring. One home had no electricity.

During the nine months in which these families were visited there were some changes observed in their housing. Two families "sealed" and painted the inside of their homes and one family built an additional lean-to for a bedroom. One mother purchased rat poison and killed all the rats, at least for the time being. Among the 19 families, there were 11 moves in nine months.

All these moves were away from the extended family setting and into a nuclear family pattern, younger couples moving with their

children out of the more crowded homes into houses or apartments of their own. Nine of the 11 moves were into houses with more room per person. There was evident deterioration of most homes and possessions over time. Broken windows were repaired with paper, rags, or cardboard. Sagging doors were simply propped up, while rotten steps and floors were patched or simply walked around. Many had already been patched so often and so long ago that there was no way to make them functional any longer. Two families in the sample actually made some repairs which improved their homes. These two families were in the process of buying their homes.

Heating was a problem in 15 of the houses, with wood-burning, pot-bellied stoves and crumbling fireplaces the main source of heat. During bad weather the infants were constantly cold due to the inadequate heat and lack of clothing.

The furniture was subjected to a lot of abuse and always falling apart. Creeping babies frequently ate the cotton batting leaking from upholstered chairs and couches. The only furniture added to any of the 19 homes during the observation period were two "third-hand television sets.

Everywhere one looked in this environment there was evidence of want. In order to live day after day and year after year in this culture an individual seemed to develop a certain set of attitudes and attributes which enabled him to survive the frustration and despair. At times the resulting behavior appeared self-defeating to an observer, but in reality was probably necessary as a defense against the hostile environment.

Survival versus Self-Defeat

The families in this socio-economic class appeared to employ various techniques for survival in a society operated by and for the middle class. Many of these survival strategies, while effective for day to day endurance, were actually self-defeating to the individual over time.

The Extended Network

The single strongest source of strength that the majority of members of this lower class depended upon seemed to be a network of people, most often relatives, but on occasion including friends. The relatives were usually from the maternal side of the family; young girls returning to live with or near their mothers when beginning their own families. This kinship structure offered many services such as shelter, food, baby care, transportation, clothing, and protective cover for a beleaguered member of the group. Assistance appeared to be given freely and with little resentment, even though the need was also great among those who donated. It was as though each provider realized that tomorrow he might easily become the recipient. If an "outsider" wandered into the neighborhood looking for a member of this kinship group, protective ranks quickly closed, and the individual's very existence was denied until the nature of the business was determined. This family interdependence had a negative aspect in that it tended to further separate and isolate families into cliques. However, it formed the only base of security and trust that most people had.

Passive Resistance

Racism exists in many forms and its presence, both overt and covert, was observed during the course of this study. The white deputy's ominous silence when asked for directions to a Negro home or the wary suspicious manner in which the white observer was first received into the Negro home are only two examples of the distrust and fear existing between races. By employing passivity and deferential behavior toward all whites the Negro male must lower his self-esteem and worth in his own eyes and those of his family. Unable to express his hostility toward the causal agent, the Negro father later appeared to displace his accumulated wrath upon self, wife, and children.

Working Mothers

Financial need among these families dictates that every one capable of earning money must do so. Older children stay out of school and mothers leave their families to seek work. Child-caring facilities available to these families are marginal at best and frequently nil. These mothers often take four or five small children with them to the fields while they hoe or pick produce from sunrise to sunset. Mothers usually have little time or energy left to spend in teaching or training their children. The woman in the family has an easier time finding and keeping work than does the man. If she later becomes the major provider, the locus of power sometimes shifts to her at the expense of the male's role, thus creating and maintaining matriarchal families.

Agency Aid

When pushed to extreme need these families do turn to local and state agencies for help, but there are often too many obstacles and delays for effective relief. Their inability to plan ahead creates major problems, for by the time they have finally contacted an agency, immediate help is needed. Paperwork and bureaucratic functionings of most organizations are frustrating, non-intelligible, and ultimately threatening to the lower-class individual and so they withdraw to their own inadequate resources again. A highly personal approach by one "who cares" creates an atmosphere in which these individuals can find security and continuity.

A SURVEY OF LOW-INCOME NEGROES IN ALACHUA AND SURROUNDING COUNTIES

Patricia Kwachka

This survey is divided into four sections: family structure, marriage, subsistence, and material culture. These divisions are not intended to reflect the whole of low-income, Negro culture, but are merely convenient groupings for the phenomena observed.

Secondly, I wish to emphasize that these observations are no more than observation, gathered only from my exposure to the culture during infant testing. Although I have supportive information from four parent educators, this survey requires substantiation through standard anthropological field techniques.

A. Family Structure

The family has traditionally been a fundamental focus in anthropological research. Since it is in many ways a microcosmic reflection of the containing culture, the family provides a basis for understanding the culture as a whole. The family, from an anthropological point of view, is a network of relational roles. Thus, not only are biological relationships defined, but also the functional relationships of those family members recognized by the culture.

Since membership recognition is relative to the specific culture, structural descriptions of family are therefore based on the least complex form, the nuclear family: two mature adults, living together in a socially recognized union, and their offspring. Most societies extend family membership to include other kinship relationships. It is the manner in which these relationships are extended that determines "type" of family structure.

In this population, the prevalent family type is the "joint family": two or more nuclear families linked through the maternal or paternal line. Since linkage is in this case maternal, the population exhibits joint matrilocal family structure. Typically, female offspring, after marriage, maintain residence in their parents' home; male offspring join the families of their wives.

At first glance, many of this group do not appear to follow this characteristic residence pattern. The married daughter establishes a separate residence with her husband (neolocal residence). In some cases, this situation is truly a neolocal, nuclear family. More frequently, it is an adaptation of the prevailing structure. This interpretation is based on two observations.

First, the daughter's new residence is almost always within walking distance of her parents' home. Frequently, it is no farther than next door. Almost never is it in the home of the groom's parents.[1] Secondly, there is no difference in the functional relation between the parents of the bride who remains at home and the bride who moves away. In both cases, the mother shares in the raising of children, care of the house, and contribution of income with her daughter.

B. Marriage

Every culture regulates, to some extent, who may marry whom. One must marry within a specific boundary, or outside another (endogamy and exogamy). These boundaries reflect many of the values and functional

[1]So far, there have been only two exceptions. The first is a woman who lives next door to her husband's parents. Her parents live thirty miles away in Gainesville. Her parents take care of her children while she works (at great inconvenience to her since she does not work in Gainesville) and she spends most of her non-working hours with them. The second exception is a woman who lives in her husband's parents' home; the circumstances of this residence are very vague and peculiar, and yet to be explained.

relationships of their defining culture. It is, therefore, unfortunate that I have been unable to obtain reliable information in this area. The problem has been one of definition. Many of the women in this group are married in every respect except the legal contract. They maintain a stable, long-term liaison with a single mate. The union is socially, and legally, recognized in the surname of the children, that of the father; and he is expected to share in the responsibilities of maintaining the mother's household.

Analytical difficulties arise when one male is attached to two or more households. Since the disruption is social as well as theoretical, I suspect that this aspect of the social organization is in the process of changing. Relationships no longer adhere to traditional forms, and new norms have yet to be established.

This suspicion is supported by observation. In small towns and settlements, typically conservative areas, the incidence of liaison relationships is much lower than in Gainesville, a larger community where culture change would proceed more rapidly. A second observation is that liaison relationships are more frequent among younger women. Women in their mid-thirties and older are usually married. This suggests that this form of relationship is a relatively recent development. (There is, of course, the possibility that it is the custom for women to marry at a later age, after having had one or two experimental liaisons.)

One further observation in this area may, with further investigation, modify the previous description of family structure and residence rules. It is the unmarried daughter, with children, who remains in her parents' home. The married daughter, after the birth of one or two children, establishes a separate, though not truly neolocal, residence.

C. Subsistence

Where matrilocal patterns exist, one may expect female household members to play a major role in obtaining subsistence. The present population conforms to the expectation. Although the male may work, his earnings are not applied to household maintenance. Rather, he spends his income on his own clothes, his car, and in recreation with other males. His wife, or mate, may expect some small part of his income, but must earn the majority of what is needed herself. This is gained through one or more of the sources listed below.

1. Full-time employment

By full-time I mean not only forty or more working hours per week, but year-round employment, with a fixed wage. The qualification is made in order to judge subsistence sources, which include full-time but seasonal employment, in terms of economic stability.

Women have full-time employment in cafeterias and lunchrooms, in laundries and poultry processing plants, and as hospital aides. Salaries are low and federal standards only slowly met. For instance, the poultry plant in Alachua paid, until January 1968, $1.30 an hour. Out of this, employees furnished their own rubber aprons, gloves, and boots; the latter two items had to be replaced approximately every other week. It was not uncommon for employees to work sixteen hours a day. In January, the plant instituted two shifts and wages of $1.60 an hour. However, employees are no longer allowed to work overtime, resulting in a maximum monthly income of about $280. Although this is a relatively high income for Negro workers, it is certainly insufficient to support a family with several children.

2. Part-time employment

The definition of part-time is here expanded to include full-time employment that is seasonal or temporary. The majority of women in this population work only part-time. The most common type of part-time employment is "day work," which consists of housework and child-care in white homes. Wages vary. In rural and small town areas, $1.00 an hour is considered very good pay. An Alachua woman commented that she preferred working in Gainesville, despite the commuting expense, because she could earn at least $.75 an hour there; she felt lucky to receive even that in Alachua.

Seasonal work in agriculture is another common form of part-time employment. Hours are long and wages poor. Women working in tobacco fields stringing and hanging leaves earn about $8.00 for a nine to eleven hour day. (Men earn about a dollar more a day cropping leaves.) Improved migrant wages may force the scale slightly higher this year.

3. Welfare

A third source of income is "The Welfare." Although present information is incomplete as to the number of women in this population receiving welfare payments, probably at least half of them do. As a subsistence source, welfare support is insufficient. The Welfare Department pays a $32.00 monthly maximum for each child, not to exceed a total payment of $84.00. Thus, a mother of two receives $64.00; a mother of three, $84.00; and a mother of ten, $84.00.

The qualifications necessary for welfare support are notorious. Possibly even more outrageous, though less well known, are the restrictions, in the form of "suggestions," imposed upon the recipient. For example, having established that an applicant for Aid for Dependent Children has no male on the premises nor regular male visitor (the assumption being,

one must suppose, that just any male friend either should be or is contributing financial support), the Welfare Department "suggests" that the applicant receive male visitors during daylight hours only. Thus, the Welfare Department not only insures proper moral standards, but also perpetual welfare payments; for the applicant is thereby restricted to males who are probably not wage earners and she may well prefer the security of her welfare check to a financially insecure marriage.

Besides attempting to enforce middle class morality, the Welfare Department would like lower class Negroes to have white middle class family structure. To this end, local workers are instructed to encourage young unmarried mothers to move away from their parents' home. As a result, the recipient must either hire a babysitter (thus consuming a large portion of her small income), or remain at her new home (equally impractical since not even the Welfare Department expects a family to subsist on $84.00 a month).

As a final observation on employment, there appears to be a correlation between type of residence, neo- or matrilocal, and the subsistence source exploited. Those women who work full-time are usually those who are married with neolocal residence. Those who work part-time are women, married or unmarried, with matrilocal residence. Although further investigation is necessary to verify this correlation, there is a functional explanation. The income earned by two women working part-time in a joint matrilocal family, though probably not equal to a single full-time salary earned by a married woman with neolocal residence, is certainly sufficient for household survival.

D. Material Culture

Material culture is that aspect of a society's environment which is technological, or man-made. Although artifact analysis is most properly

the province of archeology, such examination offers, in social anthropology a useful means for indicating a culture's life-style. The following observations are very skimpy, but do suggest the barrenness of daily reality in this culture.

The prevailing type of dwelling is a long, narrow wooden frame house. (The poorest form of this house type is called a "turpentine shack.") Rooms are arranged in a similar pattern: front "stoop," very rarely a tattered screen porch, living room, followed by a short hall from which open one or two bedrooms and sometimes a bath; ending in a kitchen whose outside exit is opposite the front entrance, providing air circulation.

The plumbing facilities are rudimentary. Even in Gainesville there is frequently no running water. Where this is the case, there is usually a spigot in the front yard. Bathroom facilities consist of chamber pots,[2] water for washing and drinking is kept in a large basin in the kitchen.

Heating is provided by small kerosene stoves. Not only are they dangerous (and illegal) due to their lack of exhaust ventilation, but highly noxious in small, closed rooms. Nevertheless, they are cheap and efficient. In the small towns and rural areas, large wood burning stoves are more common than the kerosene heaters.

Interior furnishings are minimal, a consequence of small room size as much as of poverty. There is a cheap "settee," protected by a chenille bedspread, one or two straight chairs, an armchair (also protected), and the omnipresent television. Hanging curtains in doorways

[2]As a matter of fact, the houses the Jim Walters Corporation builds for Negro buyers in this area provide no structural allowances for later installation of bathroom plumbing.

are almost as universal as the television. Their use, combined with large families and small houses, results in an uncomfortable degree of "togetherness." This is the most positive description of the situation; the negative implications are endless.

Most homes make some attempt to decorate: dimestore pictures on the wall, occasionally family photographs; plaster bric-a-brac; plastic flowers; hand-crocheted antimacassars. The place of honor (the top of the television) is occupied by a framed picture of either Jesus or Jack Kennedy.

Measurement of Self-esteem

Ira J. Gordon

One of the objectives of the Parent Education Project was to increase the mother's sense of personal worth. This faced us with the question of determining, in some objective fashion, what was the mother's sense of personal worth. One instrument developed to assess this was the modification for mothers of Gordon's How I See Myself Scale (1968) which had been developed and normed on children from third through twelfth grade. The scale is a 40 item, 5 point self-report scale. Four factors seemed reasonable to use for the mothers: Autonomy, consisting of 9 items; Interpersonal-Adequacy, consisting of 17 items; Physical Appearance, 8 items; and Attitudes Toward Teachers and School, 6 items. The modifications of the scale for use with mothers consisted of changing those items which said girls or boys to women or men, and those items having to do with teachers and school from present tense to past tense. Table 1 presents the items on the above factors.

The parent educators were trained in administering this scale to mothers orally so that a mother who could not read would not be embarrassed. This training consisted of small-group role playing, tape recording and playback to attain a neutral tone of voice that might not prejudice the response. Since the instrument was developed during the first year of the program it was not possible to secure pretraining scores on the first group of experimental mothers in the project. We were able to attain scores on these mothers when their children were 12 months old. We also obtained scores on control mothers at the same time. In the summer of 1967 when new experimental and control groups

Table 1

Factors and Items on the maternal form
of the How I See Myself Scale

Autonomy

1. I'm very good at drawing
2. I'm very good at speaking before a group
3. My face is pretty (good looking)
4. I'm very good in music
5. I can handle my feelings
6. I write well
7. I like to work alone
8. I use my time well
9. I'm very good at making things with my hands

Physical Appearance

1. My hair is nice-looking
2. I'm just the right weight
3. Women like me a lot
4. My face is pretty (good looking)
5. I like the way I look
6. My skin is nice-looking
7. My clothes are nice
8. I'm happy with the way I am

Interpersonal Adequacy

1. I stay with something till I finish
2. I like to work with others
3. I don't worry much
4. I am a hit at parties
5. Women like me a lot

6. I like teachers very much

7. I feel very at ease, comfortable inside myself

8. I like to try new things

9. I can handle my feelings

10. I like the way I look

11. I want other women to like me

12. I'm very good at making things with my hands

13. Housework is very interesting

14. My clothes are nice

15. I'm happy with the way I am

16. I read very well

17. I learn new things easily

Attitude toward Teacher and School

1. People like me

2. I get along well with teachers

3. I like teachers very much

4. I did well in school work

5. Housework is very interesting

6. I liked school

Table 2 Mean Scores on "How I See Myself"

	Autonomy		Int. Adeq.		Phys. App.		Teacher-School	
PEP Negro mothers (N = 72)	24.33	4.42	61.49	12.53	25.83	6.39	21.49	3.97
PEP white mothers (N = 19)	20.16	4.26	60.16	11.40	22.84	7.22	20.63	3.50
Jr. Col. white fr. (N = 283)	33.86	5.54	44.30	8.33	26.36	5.94	27.43	3.64
Jr. Col. Negro fr. (N = 48)	33.15	5.42	45.96	10.32	27.50	6.58	26.94	3.79
Ala Cnty. HS white (N = 806)	25.87	5.57	63.08	9.20	27.95	5.61	22.11	4.01
Ala Cnty. HS Negro (N = 241)	26.89	5.37	64.02	11.01	29.66	6.35	22.49	3.95
Follow Through PE's (N = 44)	24.84	4.99	65.68	10.31	28.00	4.93	23.98	3.02

were added, we were able to secure pretest data on these mothers and now have a second set of scores on these mothers when their babies reach 12 months. We are in the process of gathering further test data on the first group of mothers as their babies turn 24 months of age. For this report we are not concerned with changes as a function of training, but rather a descriptive assessment of the self-concepts of our mothers compared to other known populations measured on the same instrument. Table 2 presents the comparative data. The normative group consisted of 9,000 Alachua County elementary and high school students. The particular group listed in Table 1 represents the high school girls from that population. In the original study (Gordon, 1968) there were no significant differences by social class among these girls except for the very small group of 13 girls, practically all white, whose fathers were in the semi-skilled laborer category. Because of this lack of difference between social classes in the high school population, the table here presents pooled data. In September, 1967, all entering freshmen to the St. Petersburg Junior College took the How I See Myself Scale as the final item in the entering freshman test battery as a part of a predictive study of test scores on achievement in the freshman year. Scores for the freshman girls are presented in the table.

In September, 1968, the Institute for Development of Human Resources began its Follow Through Assistance Program to the following six school systems in the United States: Philadelphia, Pa.; Richmond, Va.; Jacksonville, Fla.; Jonesboro, Ark.; Lac du Flambeau, Wisc.; and Yakima, Wash. The Institute model for Follow Through Assistance is an adaptation of the Parent Education Program for primary age school children. Each

community selected parent educators who were drawn from the populations to be served in the Follow Through schools. As a part of the research design for that program, the parent educators took the How I See Myself test. The high school students and junior college freshmen took the school form of the How I See Myself Scale; the mothers in the Parent Education Project and the parent educators in the Follow Through Program took the modified scale. This allows us to make two kinds of comparisons: First, how do our mothers resemble girls who are either seeking more education (junior college students) or who already have a higher level of education by their presence in high school, and second, how do our mothers compare with a group of disadvantaged women throughout the country who have sought and been selected for employment in school systems and who therefore, it might be assumed, have more drive or achievement motivation?

On the Autonomy factor, the Negro PEP mothers are higher than white, lower than junior college and high school girls of both races; the white PEP mothers are lower than all groups. ($P > .01$)

In Interpersonal Adequacy, the PEP mothers are higher than junior college freshmen ($P > .001$). Although lower than the FT-PE's, the differences just miss being significant at the .05 level.

In Physical Appearance, the PEP mothers are lower than high school girls ($P > .01$), and the FT-PE's ($P > .05$ Negro, .01 white). The white mothers were lower than junior college girls ($P > .05$).

On Teacher-school, the PEP mothers are lower than junior college girls and FT-PE's, ($P > .001$), the white PEP mothers are lower than the Negro high school girls ($P > .05$).

It is clear from the table that the mothers in the Parent Education Project who entered in the summer and fall of 1967 reported

themselves generally in a less favorable light than the other groups. The white mothers, although few in number, report themselves least adequate. The PEP mothers surpass only the junior college girls in Interpersonal Adequacy. This may be a function of the junior college situation. The junior college testers felt that these scores were due to the orientation pressure, and the transition from high school to junior college.

The women employed as parent educators in the Follow Through programs report themselves more favorably toward school and teachers, and also toward their own physical appearance than do the PEP mothers. Whether this reflects some self-selection or is the result of employment is impossible to determine from the data. Most of the PEP mothers are employed, but the nature of the employment may make a difference. Generally, the How I See Myself scale indicates consistent differences in self-esteem between groups. It thus seems to be a useful measuring rod for comparisons. It remains to be seen if the program has enough impact to modify self-esteem.

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A Study of the Relationships Between Trained and Untrained Twelve Month Old Environmentally Deprived Infants on the "Griffiths Mental Development Scale"

J. Ronald Lally

Introduction, Problem and Purpose

Current thinking in the field of developmental psychology emphasizes the lasting significance of events that occur during the first year of life. These opinions stem, in part, from the Freudian belief that development is continuous, with each phase influencing subsequent phases. Learning theory also lends support to the potency of early experiences since learning associated with variable ratio reinforcement schedules, prevalent during infancy, is highly resistant to extinction. Piaget (1952) strongly suggests that thinking does not merely emerge but evolves from a person's early interactions. Basic schema are modified because of the need for, and the process of, adaptation to existing conditions. The process of adaptive change is dependent on the existing environment for intellectual growth, making the nature of early experience critical for subsequent development.

After reviewing a number of longitudinal studies, Bloom states, "The effect of the environments, especially the extreme environments, appears to be greatest in the early (and more rapid) period of development .... the evidence so far available suggests that marked changes in the environment in the early years can produce greater changes in intelligence than will equally marked changes in the environment at later periods of life." (Bloom, 1964, p. 79)

Adapted from a paper presented at the annual meeting of the American Education Research Association, Chicago, February 1968.

Differences Discovered Through Early Testing

In recent years, Deutsch and Brown (1964) studied the social influences in Negro-white intelligence differences. Controlling for socio-economic status, they found that children with some pre-school experience have significantly higher intelligence test scores at the fifth-grade level than do children with no pre-school experience. Knobloch and Pasamanick (1966) found during a longitudinal study of Negro and white Baltimore infants that the developmental quotients of all infants tested at forty weeks spread out when tested at three years of age, so that the lower-class Negro goes down in developmental quotient, the upper non-white and the lower white group remain unchanged and the upper white group goes up in developmental quotient. This led them to believe that the biological determinants serve primarily to establish the physiological limits of potential in the organism. The socio-cultural factors, on the other hand, are like the soil in which plants are nurtured.

Bayley (1967) and her collaborators, in a recent summation of a study correlating infant development tests and later intelligence, reported verbal facility as the best predictor of later intelligence. They found significant correlations between an item cluster composed principally of vocalizations and girls' intelligence scores.

In the most complete study of infant intelligence in many decades (Bayley, 1966) a difference though small was found between first born and later born infants at 12 months of age. Negro youngsters were found to be significantly higher scorers than whites at 12 months on motor tasks. In discussing her findings, Bayley states:

"It would appear that the behaviors which are developing during the first 15 months of life, whether they are motor skills or the early

perceptual and adaptive forms of mental abilities, are for the most part unrelated to sex, race, birth order, geographic location, or parental ability.

Although there is a considerable overlap of scores among whites and Negroes of the same age, a genetic factor may be operating. That is, Negroes may be inherently more precocious than whites in their motor coordinations." (Bayley, 1965, p. 408)

Similar findings are reported by Knobloch and Pasamanick (1953), Pasamanick (1946), and Williams and Scott (1953).

Hindley (1962) found no differences in IQ at 6 months and 18 months between upper-, middle-, and lower-class infants. Differences did appear at 3 years and increased at 5 years to 129.13 for upper class, 113.64 for middle, and 102.37 for lower class.

The "Griffiths" Test:

Hindley (1965), in a discussion of the results of a study comparing the "Griffiths" at six and eighteen months with the "Stanford Binet" at three and five years, feels that when compared with other infant tests the high level of correlations found between the "Griffiths" test and the "Stanford Binet" could be the result of any one of three factors.

Certainly the more heterogeneous nature of the sample than of most American studies would lead one to expect higher values. Again, the exclusion of cases where the test results appeared invalid on account of poor co-operation, etc., would tend in the same direction. However, this would not account for the higher levels than those of Bayley (1933), insofar as she made attempts to minimize poor reliability by averaging results of adjacent testings. Finally, it may be that the Griffiths Scale is a

better instrument than other baby-tests which have been commonly used. (Hindley, 1965, p. 96)

Cronbach (1960) reports the 260-item "Griffiths" permits more reliable measurement than any other instrument for testing infants' intelligence. The main standardizing sample consisted of five hundred and seventy-one children, with the largest standardizing sample at one year for any test till the recent revision of the "California First Year Mental and Motor Scales" (Bayley, 1966). The "Griffiths" retest reliability for sixty children from the original five hundred and seventy-one was 0.87 (Hindley, 1960).

Hypotheses

It is expected that training or experience on specific motor and mental tasks will increase the probability that a child will score higher on a test of mental development than a child who had no training in those tasks. It is also expected that the general life space of a child, his home life and his exposure to different ideas and events, will influence how a child scores on a test of mental development. It is further expected that many children cannot take full advantage of specific motor and mental training because of severe conditions of deprivation in which they live. The following hypotheses and questions were selected from the many that could possibly grow from the statements above.

Hypotheses:

1) There will be no differences between the sexes on General Intelligence quotient and the various sub-tests.

2) First born children will score higher than later born on the GIQ and the various sub-tests.

3) There will be no significant difference in scores between the races on GIQ and the various sub-tests excluding locomotor skills.

4) Negro children will score higher on the locomotor sub-test than will Caucasian children.

Questions:

Will there be an interaction between experimental conditions and sex of the child?

Will there be an interaction between experimental conditions and birth position?

Will there be an interaction between experimental conditions and race of the child?

Method

Subjects:

The eighty-nine subjects were twelve month old infants who had a normal birth at the J. Hillis Miller Health Center in Gainesville, Florida, between June 15, 1966 and December 31, 1966.

Materials:

The training materials are included in the booklet "Intellectual Stimulation for Infants and Toddlers."[1] The exercises in this booklet were presented to the mother approximately once a week with the purpose of involving her and her child in cognitive games and tasks especially

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[1] I. J. Gordon & J. Ronald Lally. Intellectual Stimulation for Infants and Toddlers, Gainesville, Florida, available through the Institute for Development of Human Resources.

selected to coincide with the current thinking in cognitive development. The testing materials used were the "Griffiths Mental Development Scale" for testing babies from birth to two years. This test was administered to all the infants as soon as possible after they became twelve months old. Infants older than fourteen months of age at the time of testing were excluded from the population for this analysis.

Design and Procedure:

1) Training

A) The experimental population (53 subjects) was visited in their homes by a Parent Educator. The mothers in this population not only received instructions as to how the exercises are to be carried out but they also are counseled in the general attitude of seeing them as play. Part of the instructions include the fitting of these exercises into the daily routine of the mother so that a special time need not be set aside for education. Other activities presented by the Parent Educator include instruction in toy, doll and mobile making.

B) Half the control group was not contacted until they were twelve months of age. They were then asked to volunteer for testing. The other half of the control group was visited once a month by a nurse, and the home situation was observed for descriptive purposes. No training was carried on, but this group was tested at six months on the stimulation materials. These two groups were joined to form one control group of thirty-six infants.[1]

2) Testing

The "Griffiths" test was administered between twelve and fourteen months to the entire population. Testing was conducted by two testers who

[1]Preliminary study revealed no differences between controls on Griffiths scores (Ed.).

had completed the "Griffiths Intelligence Test Correspondence Course."

The test is divided into five separate sub-tests but is administered as a whole rather than by sub-tests so that the tester is free to switch back and forth from sub-test to sub-test to hold the child's interest. The five areas: locomotor skills, personal-social skills, hearing and speech skills, eye and hand coordination skills and performance skills can be analyzed separately with scores computed for each sub-test.

Analysis

A 2x2 analysis of variance design was employed to assess the magnitude and direction of differences between the major treatment groups on General Intelligence Quotient (GIQ) and the five separate sub-tests. Table I shows the design used. The same design was used for each sub-test.

TABLE 1

Analysis of Variance Design

	Male	Female
Trained	GIQ Mean	GIQ Mean
Untrained	GIQ Mean	GIQ Mean

	Negro	White
Trained	GIQ Mean	GIQ Mean
Untrained	GIQ Mean	GIQ Mean

	1st Born	Later Born
Trained	GIQ Mean	GIQ Mean
Untrained	GIQ Mean	GIQ Mean

Assessment of within group differences by t test enabled a more intensive testing of the a priori directional hypotheses stated earlier.

The scores from which the means in the following tables came were attained by following the Griffiths method of scoring. The General Intelligence Quotient (GIQ) computation is the familiar $\frac{MA}{CA} \times 100$. The sub-test scores are computed by multiplying the raw score for the particular sub-test by 5 (the number of sub-tests), equating this score to an MA for that sub-test and then proceeding with the $\frac{MA}{CA} \times 100$ formula. The MA in both the GIQ and sub-test computation is adjusted to account for the number of items on the test per month (3 items per month, per sub-test, the first year and 2 items per month, per sub-test, the second year). The completed formula for a sub-test score would be: $\frac{\text{1st year items passed} \times 5}{3} + \frac{\text{2nd year items passed} \times 5}{2} = \text{"MA" (sub-test MA)}$ $\frac{\text{"MA"}}{CA} \times 100 = \text{sub-test score.}$

Results

First Born and Later Born Infants:

Twenty-one children in the sample were first born and sixty-eight were later born. No significant interactions were discovered between the experimental situations and the birth order of the children on GIQ scores and sub-tests. No significant differences were found between combined experimental and control first born scores when compared with combined experimental and control later born scores. The means and SD's by sub-test for the first and later born infants are reported in Table II. The means of the later born experimental babies are higher than the first born babies on all six sub-test areas. The later born controls score higher than the first born controls on five of the six sub-tests.

The results of the *t* tests show that later born experimentals scored significantly higher than later born controls on the sub-test for hearing and speech. Both first and later born experimentals scored

significantly higher than their controls on the sub-test of eye and hand coordination for first born. Significantly higher t's were found in favor of later born experimentals when later born experimental scores were compared with first born controls on the personal-social sub-test, hearing and speech sub-test, and eye and hand sub-test.

TABLE 2 - BIRTH ORDER DIFFERENCES ON GRIFFITHS SCALE OF MENTAL DEVELOPMENT

Sub Categories	Group	First Born			Later Born		
		No.	Mean	SD	No.	Mean	SD
General IQ	Experimental	10	107.40	10.49	43	111.12	11.90
	Control	10	105.50	11.28	25	108.40	9.82
Locomotor	Experimental	10	112.60	12.47	43	121.23	20.35
	Control	10	123.60	19.40	25	119.12	15.77
Personal-Social	Experimental	10	107.10	10.70	43	108.40	9.39[C]
	Control	10	101.20	7.96	25	106.20	7.80
Hearing-Speech	Experimental	10	98.90	17.60	43	101.00	16.03 [AB]
	Control	10	91.50	14.28	25	94.60	13.91
Eye/Hand	Experimental	10	112.70	12.27[A]	43	115.84	13.56 [AB]
	Control	10	103.40	14.01	25	109.88	9.31
Performance	Experimental	10	105.80	12.64	43	112.07	14.36
	Control	10	108.00	15.01	25	110.56	15.20

A = Higher than control in same cell, $p < .05$, one-tailed
B = Higher than first born controls, $p < .05$, one-tailed
C = Higher than first born controls, $p < .01$, one-tailed

Comparison of Negroes and Whites:

Seventy-three Negro infants and sixteen white infants were included in the sample. Analysis of variance yielded no significant interactions between the experimental situations and the race of the children, and no significant differences between the combined scores of Negro experimental and control children when compared with the combined

scores of white experimental and control children. The means and SD's by sub-test for the Negro and white children are presented in Table III. The white children scored higher than the Negro children on al.. tests in both the experimental and control situations although many of these differences were very small. When the *t* tests were run testing the *a priori* predictions, some differences were discovered.

TABLE 3 - RACE DIFFERENCES ON GRIFFITHS SCALE OF MENTAL DEVELOPMENT

Sub Categories	Group	White			Negro		
		No.	Mean	SD	No.	Mean	SD
General IQ	Experimental	6	116.50	8.64[B]	47	109.64	11.82
	Control	10	110.80	11.37	26	106.62	9.56
Locomotor	Experimental	6	124.50	11.86	47	118.98	20.07
	Control	10	123.80	17.95	26	118.81	16.10
Personal-Social	Experimental	6	108.50	4.72	47	108.11	10.04
	Control	10	105.30	8.83	26	104.85	7.89
Hearing-Speech	Experimental	6	112.17	14.46[B]	47	99.13	15.93[A]
	Control	10	94.60	12.46	26	94.12	14.85
Eye/Hand	Experimental	6	118.00	4.98[B]	47	114.89	13.97
	Control	10	117.70	10.97	26	106.85	10.89
Performance	Experimental	6	114.67	13.71	47	109.98	14.45
	Control	10	115.30	14.67	26	108.69	15.47

A = Higher than control of same race, $p < .01$, one-tailed
B = Higher than control of opposite race, $p < .01$, one-tailed

White experimental children scored higher than Negro control children on GIQ, hearing and speech sub-test, and eye and hand sub-test. On the hearing and speech sub-test Negro experimental children scored higher than Negro controls, white experimentals scored higher than white controls ($p < .025$, one-tailed).

Sex of the Infant:

Table IV gives the means and SD's attained by the different groups which were composed of forty-four male and forty-five iemale infants. Experimental females scored higher than experimental males on all six tests. Control males scored higher than control females on five of the six tests. Female experimentals scored higher than female controls on GIQ, personal-social, and eye and hand. They were significantly better than male controls on hearing and speech and eye and hand. Male experimentals scored higher than the male and female controls on the eye and hand sub-test.

TABLE 4 - SEX DIFFERENCES ON THE GRIFFITHS SCALE OF MENTAL DEVELOPMENT

Sub Categories	Group	Female			Male		
		No.	Mean	SD	No.	Mean	SD
General IQ	Experimental	23	112.91	11.21[A]	30	108.50	11.79
	Control	22	106.32	11.14	14	110.07	8.08
Locomotor	Experimental	23	124.04	18.61	30	116.20	19.45
	Control	22	116.68	17.24	14	125.71	14.19
Personal-Social	Experimental	23	110.61	7.70[B]	30	106.27	10.50
	Control	22	103.73	8.29	14	106.93	7.49
Hearing-Speech	Experimental	23	106.35	12.41[C]	30	100.03	18.77
	Control	22	94.77	12.46	14	93.43	9.61
Eye/Hand	Experimental	23	118.91	14.37[BC]	30	112.43	11.84[AC]
	Control	22	105.96	11.45	14	111.714	9.38
Performance	Experimental	23	112.48	15.27	30	109.00	13.61
	Control	22	111.41	15.13	14	109.14	16.14

A = Higher than same sex control, $p < .05$, one-tailed
B = Higher than same sex control, $p < .01$, one-tailed
C = Higher than opposite sex control, $p < .05$, one-tailed

Analysis of variance yielded significant F ratios in these areas:

1) Interaction between experimental females and control males and experimental males and control females on the locomotor sub-test.

2) Interaction between experimental females and control males and experimental males and control females on the eye and hand sub-test.

TABLE 5 - RESULTS OF 2x2 ANALYSIS OF VARIANCE
MALES, FEMALES, EXPERIMENTALS AND CONTROLS

TEST	GROUP	F RATIO	TEST	GROUP	F RATIO
General IQ	Exp. vs Cont.	1.09	Hearing-Speech Quotient	Exp. vs Cont.	3.72
	Male vs Female	0.02		Male vs Female	0.15
	Interaction	2.84		Interaction	-0.00
Locomotor Quotient	Exp. vs Cont.	0.08	Eye/Hand Quotient	Exp. vs Cont.	6.57*
	Male vs Female	0.02		Male vs Female	0.02
	Interaction	4.55*		Interaction	5.26*
Personal-Social Quotient	Exp. vs. Cont.	2.55	Performance Quotient	Exp. vs Cont.	0.02
	Male vs Female	0.09		Male vs Female	0.78
	Interaction	3.74		Interaction	0.03

* Significant F ratios at the .05 level

Study of the locomotor and hearing and speech scores shows a contrast in style between male and female infants. The female experimentals do better on both hearing and speech and locomotor sub-tests than do their controls. The experimental males who do best on the hearing and speech test come in second best to their controls on the locomotor section.

No significant differences were found between the combined scores of male experimental and control children when compared with female experimental and control children.

Other Comparisons:

Two significant F ratios were discovered when the total experimental group was compared with the total control group. Experimental children did significantly better than the controls on the eye and hand sub-test, $p < .02$, and the hearing and speech sub-test, $p < .02$.

There were two significant F ratios attained when comparing the fifty-three experimentals with the thirty-six controls on the six different tests. Within group comparison yielded nine significant *t*'s when comparing a particular cell with its control. Nine significant *t*'s were attained when comparing between group experimental and control differences. Not one significant difference was in favor of controls over experimentals on any *t* test when comparing within and between group differences. The closest the control groups came to a significant advantage was in the locomotor sub-test when comparing male controls with male experimentals.

Hypotheses one and three were supported and two and four were rejected. Ordinal position, race and sex, within treatment groups do not differentiate subjects.

Turning to the questions: there is an interaction between experimental condition and sex on the sub-tests for locomotor and eye and hand skills. On the locomotor test, experimental females and control males score high, control females and experimental males score low. One possible explanation for this phenomenon is that our stimulation materials speed the progress in locomotor skills in females and retard the progress in locomotor skills in males. This could partly explain why we didn't find the superiority in the motor skills of Negroes previously cited in the review (Bayley, 1966; Knobloch and Pasamanick, 1953; Pasamanick, 1956; and Williams and Scott, 1953). The eye and hand sub-test results offer a

different phenomenon. Female experimentals are almost totally responsible for the differences between controls and experimentals.

No significant interactions were found between experimental conditions and race, or between experimental conditions and birth order.

Discussion

The results obtained in this study indicate that specific cognitive stimulation can be an aid to the development of intellectual skills in the environmentally disadvantaged infant. It illustrates further that a program designed with minimum contact between professionals and target group is an effect dissemination and training tool.

Equally important is the use of measurement materials structured to isolate the different factors of intelligence. Without the use of the "Griffiths" sub-test system important differences would have been lost. We found many more differences between control and experimental groups on the eye/hand and hearing and speech sub-tests than we did on the other tests. This indicates to us where our training is doing the most good and possibly points to the need to improve our stimulation in the other areas.

The differences discovered between the way males and females react to these tasks suggest biological peculiarities in intellectual development between the sexes. These differences must be taken into consideration before planning any curriculum for infants.

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The following is a further excerpt from Carol E. Bradshaw's study based upon a model developed by Gordon indicating the possible flow of relationships from the independent variables (sex of the infant, density of the home) through the two aspects of observed maternal behavior (verbalization frequency and amount of discipline) to the child's performance at age 1, on the "Griffiths Mental Development Scale" (Figure 1). The indices of verbalization and discipline were described in the previous section.

Figure 1

Relationship of Variables Tested by This Research

Relationship Between Maternal Behavior and Infant Performance in Environmentally Disadvantaged Homes[1]

Carol E. Bradshaw

Hypotheses

It was hypothesized that various maternal patterns of verbal and disciplinary interaction would have some measurable effects upon the infants in this study. Sex and crowding of family members were also expected to affect maternal behavior patterns and infant performance. In addition to these broad expectations the following specific hypotheses were tested:

1. There will be a positive relationship between the verbalizations of the mothers' and infants' performances on the Speech and Hearing sub-scale of the Griffiths.

2. Mothers of boys will have a higher frequency of verbal interaction than will mothers of girls; therefore, boys will score higher on the Speech and Hearing sub-scale of the Griffiths.

3. There will be an inverse relationship between the quantity of maternal punishment and the infants' performance on the Hand and Eye sub-scale of the Griffiths. There will be more disciplinary interaction with boys than girls, and boys will score lower on the Hand and Eye sub-scale of the Griffiths.

4. There will be a positive relationship between number or density of family members and maternal discipline.

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[1]This is the second of two edited excerpts from Carol E. Bradshaw's dissertation. It presents the relationship data.

5. There will be a negative relationship between density of family members and maternal verbalizations.

6. There will be a negative relationship between density of family members and the infants' performance on the Griffiths.

Results

Table 1 presents the data for hypotheses 1, 3, 4, 5, and 6; Table 2 presents the data for hypothesis 2 on sex differences.

Table 1

Correlations Between Home Factors and Infant Performance

	Maternal Verbalization (N=19)	Maternal Discipline (N=19)	Density (N=19)
Speech and Hearing (all) (N=19)	.21		
Speech and Hearing (male) (N=11)	.17		
Speech and Hearing (female) (N=8)	.28		
Hand and Eye		.43[a]	
General Intelligence Quotient			-.39[a]
Maternal Discipline			.21[b]
Maternal Verbalization			.08

[a]Significant at .10 linear

[b]Significant at .05 curvilinear

Relationship Between Mother's Verbalization and Infant Performance

The relationship between the mother's speech and her infant's scores on the Speech and Hearing sub-scale of the Griffiths was tested by using a polynomial regression analysis of variance. This procedure allows a comparison of the means with both linear and quadratic terms

to determine the best fit for the data. Neither the linear nor the polynomial treatment identified statistically significant relationships. Therefore hypothesis 1 was rejected.

Sex Differences in Maternal Verbalizations and Infant Performance

In order to explore the sex differences in the maternal verbalization proportions and Speech and Hearing scores, a polynomial regression analysis of variance was computed for boys and girls separately.

Student's t-test was used to determine differences in the frequency of maternal verbalizations as they related to boys versus girls, with the expectation that an accelerated rate of verbal communication between mother and infant would be associated with an increase in infant performance on Speech and Hearing sub-scale of the Griffiths. Table 2 summarizes the results of this t-test.

Boys showed a statistically significant difference in higher frequency of maternal verbalization as anticipated ($p = 0.01$) but this higher level of communication of mother to son was not associated with a significant increase over girls in the Speech and Hearing scores. The first part of Hypothesis 2 was substantiated; the second was not. The quality of these communications between sexes may be the determining factor here rather than the frequency.

Relationship Between Maternal Discipline and Infant Performance

The polynomial regression analysis of variance reveals a relationship between increases in the use of maternal discipline and

infants' scores on the Hand and Eye sub-scale of the Griffiths. This difference, while significant at the 10 per cent level, as shown in Table 1, was not in the expected direction.

Table 2

Differences in Incidence of Maternal Verbalization and Speech and Hearing Scores Between Male and Female Infants

Variable	Boys Mean (N = 11)	Girls Mean (N = 8)	t-ratio
Maternal verbalizations	0.43	0.24	3.68[a]
Speech and Hearing scores	94.27	85.50	1.38

[a]Significant at the 0.01 level of significance.

It had been thought that increasing disciplinary rates would result in a decreasing performance on the Hand and Eye tasks. The reverse appears to be true. There are rising performance levels associated with increasing incidences of discipline.

Student's t-test was used to obtain a further analysis based upon sex factors. The results as shown in Table 3 reveal a trend ($p = 0.10$) for boys to receive more maternal discipline than girls. The boys scored significantly higher than girls on the Hand and Eye scores ($p = 0.05$). Hypothesis 3 was not substantiated.

Relationship Between Family Crowding and Maternal Discipline, Verbalizations, and Infant Performance

In this section of the analysis, the polynomial regression analysis of variance was used to test whether density or crowding of family members bore a relationship to the incidence of maternal behavior and the infants' Intelligence Quotients. The mean square footage per person was 88.79, while the range was 27-317 square feet per person.

Table 3

Differences in Incidences of Maternal Discipline and Hand and Eye Scores Between Male and Female Infants

Variable	Boys Mean (N = 11)	Girls Mean (N = 8)	t-ratio
Maternal discipline	0.20	0.12	1.78[a]
Hand and Eye scores	112.09	100.25	2.54[b]

[a]Significant at the 0.10 level of significance.

[b]Significant at the 0.05 level of significance.

Table 1 presents data which show that the more room allotted to each person in the home, the higher the rate of punishment for the infant. It is evident that linear regression is not as "good a fit" for these data as the second-degree polynomial. The linear F is not significant while the curvilinear F is significant at the 5 per cent level of significance.

It was hypothesized that as density or crowding increased in these homes the amount of verbal interaction between mother and infant would tend to decrease. This prediction was not substantiated, as shown in Table 1.

The hypothesis that there would be a negative relationship between density and the infants' General Intelligence Quotient as measured by the Griffiths was confirmed at the 10 per cent level of significance. The data in Table 1 show that as space increased for each person in the home, the General Intelligence Quotient for the infant also increased.

Summary

In summary, the findings of this study were:

1. The incidence of maternal verbalizations was not associated to a significant degree with the infants' scores on the Speech and Hearing sub-scale of the Griffiths.

2. Mothers of male infants talked to their sons more than mothers of girls, but this higher rate of communication was not associated with a significant increase in Speech and Hearing scores for boys. There were no statistically significant differences between sexes although the data suggested different patterns.

3. There was a nonsignificant trend toward a higher rate of maternal discipline to be associated with higher scores for the infants on the Hand and Eye sub-scale of the Griffiths. This trend appeared to be a linear relationship.

There were sex differences in maternal discipline. Boys received a significantly greater proportion of maternal discipline, and they also scored significantly higher on the Hand and Eye sub-scale.

4. Using density of family members as the independent variable, it was found that:

Incidences of maternal discipline increased significantly as the space per person increased. There was no significant relationship established between density of family members and the incidence of maternal verbalizations. There was a tendency for the infants' General Intelligence Quotient to increase as the density of people in the home decreased. It might be that the more intelligent the family the more likely they would be to have better housing, with less intelligent families occupying more crowded quarters. Therefore, this

observed difference in intelligence as related to space may well be the results of sub-cultural factors rather than density alone.

The mean General Intelligence Quotient achieved by these infants at 12 months was 104 which compares favorably with the Griffiths' standardized norms of 100. The mean score on the Hand and Eye sub-scale was 107, slightly above the norm of 100, with the mean of the Speech and Hearing sub-scale falling below average. Apparently at the end of their first year these infants could demonstrate normal over-all cognitive growth, and deficits which occur in their cognitive development take place sometime after their first birthday.

Additional Findings

The descriptive data gathered during this study substantiated previous findings in several other areas. Deutsch (1963) and Olim, Hess, and Shipman (1965), among others, have previously reported the low rate and restricted content of verbal communication found in the lower socio-economic families. The infants in this sample attained a mean of 90 on the Speech and Hearing sub-scale of the Griffiths compared to the standardized mean of 100. This seems to indicate a below-average performance for these infants, although Griffiths does acknowledge more variation in the Speech area than in any of her other sub-scales.

In considering discipline across time, it was of interest to note that a negligible amount of discipline occurred before six months of age. Strodtbeck (1964) observed harsher discipline among his matrifocal ADC mothers than had been previously reported. Harsh and punitive discipline was observed through time in this study, but

it was seldom directed toward the infant. The siblings (18 months and older) were the main recipients of punishment. The presence of the observer and her previously stated interest in the infant may have caused some restraint on the part of the mother, at least during the observational visits.

Since the disadvantaged family usually has little ability to pay for adequate housing, several generations often live under the same roof. The effects of this crowding seemed an important factor to investigate in this research. Using Keller's Crowding Index based upon people per room, it was found that families in this sample ranged from 0.5 to 3.5 people, the mean being at 1.5. Keller (1963) reported a mean of 1.2 with the maximum crowding at 1.5 people per room from her sample of New York's urban slums.

Housing, health, and nutrition among the disadvantaged families have been receiving more attention recently due to the rising pressures for social change. The United States Public Health Department stresses the need of bringing change to the total living conditions of the poorer classes. The observations of this study have emphasized the poor housing available to these families, their inadequate diets, and health care.

Hollingshead (1949) has pointed out that there are several levels within each socio-economic class and that the top levels can differ from those on the bottom as much as one entire class differs from another. There were variations noted among the sub-cultures observed in this research but the subjects did not appear to be differentiated by race. Negro and Caucasian alike lived in similar

child-rearing processes. Since there were only three Caucasian families in the final 19 cases reported, they were not compared separately to the Negro families.

In general, this study has demonstrated that differences do exist in child-rearing patterns among these disadvantaged families. Some of these differences are related to sex and some to the infants' performance on an intelligence scale.

Conclusions

The results reported in this research have furnished support for the following conclusions:

Maternal-Infant Interaction

Differences observed in maternal verbalization and disciplinary patterns do not seem to bear an important relationship to the infants' ability to perform on a standardized intelligence test at age one. Differences in maternal verbalizations showed no correlation to Griffiths' Speech and Hearing scale, while increases in maternal discipline demonstrated a slight relationship to higher infant performance on the Hand and Eye scores on the Griffiths.

It seems that maternal verbalization patterns are a poor predictor of the infants' scores on the Speech and Hearing sub-scale, but disciplinary practices do allow some speculation as to the infants' scores on the Hand and Eye sub-scale.

Sex Differences

When sex becomes an independent variable, these findings appear to show that the sex of the infant makes a difference in maternal patterns of verbalization and discipline, with boys receiving more of both than girls.

The only significant sex difference in infant performance was attributed to boys who scored higher on the Hand and Eye subscales. Whether this higher infant performance for boys is directly related to the differences observed in maternal child-rearing patterns cannot be answered by this present study. It may be that moderate inhibitory practices by the mother serve to increase the baby's exploratory drive.

Density

This study does show that maternal discipline patterns are related to density and to the infants' achievement on the Griffiths General Intelligence Quotient. There was no relationship established between density and quantity of maternal verbalizations. Apparently, crowding people into a smaller space has little effect upon the rate of verbal exchange between mother and infant, especially if this rate is already at a minimum.

However, when density increases in the family unit, the mothers' rate of disciplinary behavior toward the infant tends to decrease. Crowding, therefore, appears to reduce inhibitory practices on the part of the mother.

The infants' General Intelligence Quotient showed some relationship to crowding. It may be that increasing density of family members results in a lowering of the infants' overall cognitive development.

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RELATIONSHIP BETWEEN OBSERVED HOME BEHAVIOR VARIABLES AND INFANT PERFORMANCE AT AGE ONE[1]

Ira J. Gordon

Our home visit approach to parent education relies heavily on the assumption that the mother or mothering one uses the information she learns from the parent educator with her child at other times during the week. We were faced, therefore, with the problem of determining whether in fact the mother does conduct stimulation on her own. We felt, however, that relying on an interview or report technique in which the mother had to say that she did or did not stimulate the child would be invalid. We developed, therefore, as items on the Parent Educator Weekly Report, a list of specific behaviors that we expected to yield objective evidence that might be interpreted as indicators of parental involvement. Table 1 contains those items which we hoped would serve as a measure of maternal attitude. Our assumption was that high scores on the attitude index would probably be indicative of a mother who spent time with her child using the exercises during the week. There is no direct verification of this fact.

Behaviors listed under A-G on Table 1 were used by Sue Herman (1968) in a pilot study. She sampled 37 mothers who met the following criteria: (1) The baby was tested before December 31, 1967, and (2) a minimum of 17 training sessions had taken place between the baby's 3-month and 12-month birthday. Her hypothesis was that children of mothers whose attitudes were positive toward the project would perform more successfully on the Griffiths Scales of Development than those who were less positive. Her pilot results supported the hypothesis.

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[1]John Maurelli, research associate in the Institute, developed the computer programs for the indices in this report.

Table I Items From Weekly Report for Attitude Index

Series Information

A) How did the mothering one react to your instructions?
   1. Looked at you while you were talking, and/or asked questions _____
   2. Did other things while you were showing her how to do the exercise (examples of other things: straightened baby's clothes, looked around the room, did housework) _____
   3. Walked out of the room while you were explaining things to her _____
   4. Refused to do an exercise _____
   5. Laughed at and/or scoffed at instructions _____
   6. Other _____ What? _____

B) Mothering one's ability to repeat exercises:
   1. Could repeat exercises the trainer had explained to her _____
   2. Could do part of the exercise by herself but needed the trainer's help _____
   3. Couldn't repeat exercises the trainer had explained to her _____

D) When the mothering one goes over last weeks' exercises with her child she:
   1. Doesn't know what she's doing _____
   2. Knows what she's doing _____

E) When the mothering one goes over last weeks' exercises with her child she:
   1. Tries them on the child more than once if it doesn't go well the first time _____
   2. Gets discouraged or is satisfied after doing them once even if it doesn't go well the first time _____
   3. Does them more than once even if it goes very well the first time _____

F) How many interruptions were there during training that made the mothering one stop the exercise for a time? _____
   None_____, 1_____, 2_____, 3_____, 4_____, 5_____, More _____.

G) What kinds of interruptions were there?
   1. Mothering one had to care for another child_____
   2. An adult wanted something_____
   3. The phone rang _____
   4. Visitors came _____
   5. The baby had to be fed _____
   6. The baby went to sleep _____
   7. Other _____
   8. None _____

Missed Appointments and Delays:

C) How many trips did you make before you got to see the mothering one for this visit? _____

D) Did the mothering one leave a message for you on any of the trips?
Yes _____ No _____

E) When you finally got to see the mothering one:
1. She said nothing about missing her appointment _____
2. She gave a confusing explanation _____
3. She gave an understandable explanation _____

For this report, we modified Herman's attitude index to include the section on missed appointments and delays.

As a follow-up of Bradshaw's study, Jester and Bailey (1969) developed a verbal score using the items on Table 2. They divided the items into two categories based on the premise that the quality, as well as the amount of interaction, would yield important relationships with infant performance. The score reflects the verbalizations of all family members present during the time the parent educator was in the home (mother, father, sibling, grandmother, aunt, baby-sitter). The total number of checkmarks for each visit, if all six people were present, would be 48 positive and 24 negative. Means and standard deviations are presented under the headings "adult growth verbal" and "adult non-growth verbal" on Table 5. We developed an index of the mother's verbal interactions by using these same categories, adding a sentence length tally (also shown on Table 2) and dividing by the number of possible tallies (11 for growth, 4 for non-growth).

Since we knew we were working with homes where we could often assume that someone other than the mother would be caring for the infant, we designed the program so that the "mothering one" would be instructed, rather than necessarily the child's own mother. The Parent Educator Weekly Report was designed so that it was possible to code the actual relationship of the mothering one to the infant and to keep track, over time, of the person instructed. This allowed us to develop a multiple mothering index (Table 3). Although we had no hypothesis to begin with, we were interested in whether children reared under multiple mothering conditions would differ in performance from those reared under what might be perceived as more stable homes. In addition, we were aware that the chance of illness in babies during the first year of life would be high,

Table 2

Items From the Weekly Report Used in Estimates of Verbalization

Growth Producing (Social interaction)	Non-Growth Producing
1. Look directly into his face	1. Talk about him as though he were not there
2. Talk words rather than sounds	2. Their tone of voice sounds cross and angry
3. Tone of voice sounds soft and loving	3. Talk sounds rather than words (example: coo, goo)
4. Use the baby's name when speaking to him	4. Interpret to others what the baby says
5. Repeat sounds the baby makes in a questioning way	
6. Listen to the baby when the baby talks	
7. In a few words, order or tell the baby to do or not to do things	
8. Explain and describe things when talking to the baby.	

Additional items for mother index:
How many words are there in most of the sentences spoken to the baby by the mothering one? 0 1 2 3 4 5 6 7 8 9

9. Tally 1 if 1, 2, 3.

10. Tally 2 if 4, 5, 6.

11. Tally 3 if 7, 8, 9.

Table 3 Items from PEWR Used for Multiple Mothering Index

CODE: 1. M=Mother 2. F=Father 3. S=Sibling (Brother and/or Sister) 4. GM=Grandmother 5. A=Aunt 6. BS=Baby sitter 7. O=Other

1. With whom did you work? M F S GM A BS Other _____

2. Is this the person you usually work with in this home?

   1. Yes _____ 2. No _____

3. Is this the person who cares for the baby most of the time?

   1. Yes _____ 2. No _____

$$\text{Index} = \frac{\text{tally of mothering change}}{(4)\ \text{number of visits}}$$

Table 4 Items from PEWR Used for Illness and Disruption Indices

Illness:

1. Did the mothering one say the baby was sick?
   a. She said the baby was sick _____
   b. She said the baby was not sick _____
   c. She did not say whether the baby was sick or not _____

2. Did you think the baby was sick?
   a. Yes _____ b. No _____

$$\text{Baby illness index} = \frac{\text{tally of sickness indicators}}{(2)\ \text{number of visits}}$$

Disruption:

1. Other activities in the room often pulled the baby's attention away from the training _____

2. There was such a great deal of activity in the room that it made it difficult to present the exercises _____

3. How many interruptions were there during training that made the mothering one stop the exercise for a time? _____
   None _____, 1 _____, 2 _____, 3 _____, 4 _____,
   5 _____, More _____.

$$\text{Disruption index} = \left(\frac{\text{number of tallies of 1}}{\text{number of visits}}\right) + \left(\frac{\text{number of tallies of 2}}{\text{number of visits}}\right)\left(\frac{\text{number of tallies 3}}{\text{number of visits}}\right)$$

and that these were also homes in which many distractions might be present during the training session. The Parent Educator Weekly Report, therefore, allowed us to record the disruptions occurring during training and the status of the baby's health. Table 4 presents the illness and disruption items.

Using Herman's criterion of a minimum number of 17 home visits, we examined the various home factors mentioned above and their relation to infant performance. The sample consisted of 41 boys and 38 girls.

RESULTS

Tables 5 and 6 present the data.

First, it is clear from Table 5 that there were no significant differences in the treatments rendered by either the mother or other adults toward boys and girls, and that neither boys nor girls were more illness prone.

Although a weekly visit every week from three months of age to twelve months of age would have meant a total of 39 visits, the actual mean number of visits would indicate that in only about two weeks out of three was an actual training session conducted. The difference between the mean number of visits and the number of visits to mother would indicate how many times, on the average, someone other than the mother was taught. We had expected that there would be a larger discrepancy between these two figures, but generally speaking, across these 79 families the mother was the actual mothering one in a substantial proportion of the cases.

A maximum score on the multiple mothering index would have been 1.00 with a range from 0 to 1. The mean of less than .10 indicates that

Table 5 Means and Standard Deviations, Home Variables and Infant Test Performance

	Boys(N=41)		Girls(N=38)		t	Total (N=79)	
	X	s.d.	X	s.d.		X	s.d.
No. of visits	26.76	5.07	24.28	6.87	1.80	25.57	6.13
No. of visits to mother	21.76	7.54	20.42	8.40	.73	21.11	7.99
Multiple mothering index	.078	.052	.059	.059	1.49	.069	.056
Baby illness	.076	.066	.096	.123	-.87	.086	.098
Disruption	.353	.452	.333	.627	.16	.343	.543
Mat. growth verb. index	.661	.254	.665	.228	-.08	.663	.242
Mat. nongrowth verb. index	.185	.167	.149	.110	1.11	.168	.143
Attitude index	.605	.269	.590	.278	.24	.597	.273
Adult growth verb mean	9.63	2.67	9.42	2.65	.35	9.53	2.66
Adult nongrowth verb mean	1.13	.781	.89	.612	1.47	1.01	.715
GIQ	107.22	10.38	111.61	10.17	-1.86	109.33	10.48
Locomotor	117.10	20.36	123.26	17.00	-1.43	120.06	19.07
Personal-Social	106.91	8.06	109.11	8.58	-1.16	107.97	8.40
Hearing-Speech	97.32	16.33	100.55	14.20	- .92	98.87	15.43
Eye-hand	109.73	11.55	113.50	11.68	-1.42	111.54	11.77
Performance	105.43	13.04	111.87	13.34	-2.14	108.52	13.58

Table 3
RELATIONSHIPS BETWEEN OBSERVED HOME VISIT VARIABLES
AND INFANT TEST PERFORMANCE
(N=79; 41 Boys, 38 Girls)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. No. of visits	Total	---	.56		-.23					.21							
	Boys		.45	.30		.29				.43							
	Girls		.64		-.28												
2. No. of visits to mother	Total		---	-.19			.57		.56								
	Boys						.68		.60						.26		.33
	Girls			-.32			.48		.52						-.33		
3. Mult. mother index	Total			----						.24	.23		-.27			-.28	
	Boys																
	Girls												-.38			-.34	
4. Baby illness	Total				----	.48											
	Boys					.40	.27										
	Girls					.53											
5. Disruption	Total					---				.27	.40						
	Boys									.34	.31						
	Girls										.54						
6. Mat. growth verb. index	Total						---	.53	.68	.45	.31						.19
	Boys							.55	.74	.36	.31	.26			.29		.26
	Girls							.51	.61	.56	.33						
7. Mat. nongrowth verb. index	Total							---	.24	.24	.80						
	Boys								.31		.79						
	Girls									.31	.81						
8. Att. index	Total								---			.21		.21		.19	
	Boys											.26		.28	.34		
	Girls																
9. Adult growth verb. mean	Total									---	.47						.19
	Boys										.48			.40			
	Girls										.46						.36
10. Adult nongrowth verb. mean	Total										---						
	Boys																
	Girls												-.27				
11. Griffith GIQ	Total											---	-.79	.72	.71	.79	.75
12. Locomotor	Total												----	.43	.37	.62	.51
13. Personal-Social	Total													---	.61	.56	.44
14. Hearing-Speech	Total														----	.41	.41
15. Eye-Hand	Total															----	.58
16. Performance	Total																---

TOTAL

r=.22, p > .05
r=.19, p > .10

BOYS

r=.31, p > .05
r=.26, p > .10

GIRLS

r=.32, p > .05
r=.27, p > .10

there was little change in the person taught over the year. There were two sickness indicators on the weekly report and the range on the index again was 0 to 1. The mean of less than .10 indicates that these 79 babies were viewed as healthy at the times the parent educators visited them. It may be that the one-third of times when the homes were not visited there might have been sickness present. It was only after we had been in the program for a while that we developed a form called "Visit Not Made," so that there are insufficient data to examine what happened the other times.

The range on the attitude index is from plus one to minus one, with an index of zero or close to zero being an indication of ambivalence. The mean of about .60 indicates that these 124 mothers and mother substitutes were rather favorably disposed toward the project, and the standard deviations of around .25 indicate that practically the whole population falls on the positive end of the index. It must be remembered that families always had the option to drop out of the program, and that those who were negatively disposed probably did not last until the time of testing. Our attrition data indicate that we have lost approximately thirty per cent of all families that were originally in the project in both experimental and control conditions, and of that thirty per cent only about thirty per cent withdrew from the project by refusing to continue. Most of the attrition was due to moving from the project area, although there are some families whose attrition was due to causes about which we are not clear. Basically, the high scores on the attitude index probably reflect a general positive attitude on the part of project parents.

When we examine the relationships between maternal attitude and infant performance, it is the boys who are affected. The correlations (Table 6) are low, but this may be partly due to the skewness of the distribution toward the positive side of the attitude index.

The theoretical literature indicates the importance of surrounding the very young child with what might be called a language envelope. It is believed that both receptive and expressive language are encouraged by growing up in a family situation in which there is a good deal of conversation, not only generally directed, but more specifically addressed to the child himself. As part of the project, we tried to encourage mothers to talk with their infants, call them by name, and respond to their vocalizations. The scores on the verbalization measures, however, are for behaviors observed apart from use of the particular training materials.

The verbalization indices and means show that far more verbalizations assumed to be growth producing were observed than those that were assumed to be non-growth producing. In the case of the mother, the ratio was about 3 to 2; in case of all adults it was better than 4 to 1. This suggests that other adults demonstrated more positive behavior than the mother, but this may be an artifact of the instrument.

Considering that a maximum maternal index score is 1.0, the means of over .60 indicate that a mother was observed doing, at least once in each visit, about six or seven of the eleven possible behaviors. The basic weakness of the verbalization measure is that it is a signs instrument over the span of the whole home visit, rather than a tally of frequencies within short fixed-time intervals during each home visit. We felt that the parent educator could not possibly both instruct the

the mother and keep frequency counts. We sacrificed power of the data for the main task of parent education.

In the case of the general adult measure, the means of over 9.0 would seem low if we assume that all six people were always present, with a maximum score of 48 possible. However, although we have not computed it, inspection shows that most often only the mothering one is home, with perhaps a few other people. The higher ratio of growth to non-growth of adults compared to mother, then, may be simply because many more possible tallies could be recorded. However, even with the restricted range possible with our approach, the index shows definite, although low, relationships.

Our hypothesis that there would be relationships between the verbal behavior in the home and infant performance is partially supported. It seems, from our data, that the mother's positive verbal behavior is related to her son's performance but not to her daughter's. General adult positive verbal behavior relates to the girl's performance on the performance subscale of the Griffiths and the boy's performance on the personal-social subscale. The non-growth adult verbal behavior is negatively related to the locomotor development of girls.

If our measure of verbal interaction were more powerful, we feel that there would be a more substantial indication of relationships between the verbalizations in the home and the infant's test performance. We are still gathering our two year data, using the Bayley, and this will permit an extension of this study. Further, another investigation (Resnick, Weld, and Lally, 1969) indicated a much higher production of words by two-year olds in a five minute pre-test situation than in the Bayley test time, in proportion to time. They found that the two-year

olds vocalized more and used more words when the examiner was not present than when he was conducting a Bayley examination. The low correlations between observed adult verbal behavior and child test performance, then, may be a function of both the observation instrument and the nature of the test situation as well as the items on the test.

Table 6 indicates that there is a negative relationship for girls in this group between the locomotor and eye-hand subscales and multiple mothering. We have, then, the interesting pattern that although there are no significant differences in the amount or quality of verbalizations presented to boys and girls and the amount of multiple mothering faced by boys and girls, these variables have differential effects on infant test performance. We had thought, based upon Bradshaw's earlier work, that it might be that mothers behaved more negatively in their verbal behavior toward boys than girls, but this is not revealed in this analysis.

An examination of the relationships among the observed behavior variables offers several interesting findings which merit further investigation. There is a substantial correlation between the mother's observed growth verbalization, her attitude toward the project, and number of home visits to her. This cluster of intercorrelations, and the low, but significant relationships between this set of three variables and scores of boys on the hearing-speech subscale may reflect some transactional pattern in which any one of these variables may be seen as the antecedent.

There are also high correlations, though less substantial, between growth and non-growth verbalizations. One might say that if a mother verbalizes at all she uses both growth and non-growth producing verbalizations.

The highest correlations are those between maternal non-growth verbalizations and general adult non-growth verbalizations. It should be recalled, however, that there is a confounding factor here in that the mother's verbalizations are also represented in the general adult scores.

Examination of Table 6 points up the differences between the way a mother treats a boy and a girl, even though the general pattern of means and standard deviations does not reveal differences. There is a correlation between baby illness for boys and positive mother verbalization toward them; there is a correlation between the disruption index of the home and adults' verbalizations toward boys. On the other hand, there is a negative correlation between the presence of baby illness for girls and number of visits made. One might speculate that illness in boys is more likely not to lead to canceling of the visit, and also perhaps to elicit more positive verbal behavior toward the boy than does illness in a girl. This is, of course, a highly speculative statement, because relationships cannot readily be interpreted in an antecedent-consequent fashion.

Table 6 also indicates that the subscales of the Griffiths Mental Development Scale are not independent for this population. For example, the personal-social and hearing-speech subscales correlate to such a degree that scores on one account for over one-third of the variance on the other. This suggests that as we accumulate a large enough population we should factor-analyze this instrument using the item scores.

In conclusion, the data gathered in the home by parent educators observing during the home visits indicate that they saw the mothers generally favorably disposed to the project; that in an extremely high proportion of the cases it was the mother, rather than a substitute, who

was taught; that in about one-third of the home visits there was some disruptive element present during training. Generally, the adults in the home were observed using what we labeled "growth-producing" verbal interactions to a far greater degree than "non-growth" producing. The relationships between home variables and test performance, although low, present different patterns for boys and girls.

The use of a correlational approach,to examine patterns, yields these differences which do not reveal themselves when we examine only means and standard deviations on an item-by-item basis. Our data support Kagan and Moss' tentative conclusion that "It may be unwise to pool data for males and females without first examining the data for sex differences. This means more than merely computing means and standard deviations, for many of our variables showed no significant differences in these two parameters but yielded different patterns of intercorrelations." (Kagan and Moss, 1962, p. 275).

One tendency of psychological researchers is to oversimplify their categories when it comes to socio-economic variables. Thus we use such labels as "lower social class," "the disadvantaged," or we talk about the "culture of poverty." We have learned what should have been obvious: there are wide ranges of individual differences among the families with whom we are working.

Schaefer has suggested, in conversations about the project that more clear-cut relationships will become evident as we examine the data at age 2, 3 and beyond (if our sample lasts!). Our plan calls for this analysis.

This study, however, indicates the need for a more effective means of observing mother-child interaction in the home than what can

be achieved through participant observation. A systematic observation of home ecological and behavioral variables (along the directions of Gewirtz and Gewirtz, 1968) coupled with careful description of treatment variables might enable us to better understand how much each contributes to the variance in child performance.

This investigation indicates some patterns of relationships among non-treatment variables which influence test performance within an experimental group. As such, it should make us cautious about field studies which report only pre-post data without descriptions of the facts of life which tend to influence results. Further, the nature of the relationships, based upon instruments of limited power, should stimulate the development of more precise tools both for the observation of adult-child interactions in natural settings and the measurement of infant performance. In this respect, our procedures and findings are of heuristic value in that they point out directions for further theoretical and empirical work.

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